

ABSTRACT OF THE DISCLOSURE

An apparatus and method for examining particles in a flow stream of a flow cytometer, employing incoherent light sources, such as light emitting diodes (LEDs), and detectors. The light emitting diodes operate as the excitation light sources and emit light toward said flow stream, and the detectors detect light, in particular, fluorescent light, emanating from the particles in response to the excitation light striking the particles. A controller controls each of the light emitting diodes to emit their excitation light for a predetermined period during which the excitation light radiates onto particles of interest. The controller evaluates the detected light to ascertain characteristics of the particles, such as particle size, density and granularity. The apparatus and method can further employ one or more coherent and homogenous light emitting devices, such as a laser, as an additional excitation light source. The detectors can detect the LED-excited fluorescence or the laser-excited fluorescence from the particles, and the controller can evaluate both types of detected light to ascertain characteristics of the particles. Furthermore, the controller can control the LEDs to operate in a pulsed manner, which can be synchronized with the detection of the laser-excited fluorescence or light scatter. In addition, a substantially opaque panel having one or more slits can be positioned at the image plane upon which an image of the flow stream is projected, so that the slits will allow only a portion of the image to pass to the detector associated with the panel.

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